

**B.Sc. Semester - 4 (NEP-2020) Examination****March/April-2026****CHE: Intermediate Chemistry-209 (Major-9)****Time: 2:00 Hours****Marks: 50****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Que.1 Answer the following question. (Any two) (10)
- (1) Discuss particle in one dimensional box.
  - (2) What is degeneracy? Explain in detail.
  - (3) Discuss methods for manufacture of soap.
- Que.2 Answer the following question. (Any two) (10)
- (1) Give the synthesis of nicotine.
  - (2) Explain constitution of citral.
  - (3) Give preparation of  $\text{LiAlH}_4$  and write any four applications of  $\text{LiAlH}_4$ .
- Que.3 Answer the following question. (Any two) (10)
- (1) State the difference between order and molecularity of the reaction.
  - (2) Derive the equation of rate constant for first order reaction and state its characteristic.
  - (3) Describe the tests of third law of thermodynamics.
- Que.4 Answer the following question. (Any two) (10)
- (1) Discuss the role of hemoglobin in oxygen transfer.
  - (2) Write any five synthesis methods of pyrrole.
  - (3) Derive Nernst distribution law using chemical potential.
- Que.5 Answer the following question. (Any two) (10)
- (1) Give the definition of operator and discuss addition and subtraction operator.
  - (2) Explain curtius rearrangement with mechanism.
  - (3) Explain the determination of absolute entropy of solid by third law of thermodynamics.
  - (4) Write any five-chemical reaction of furan.

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